REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-2, 4-8, 10-12 and 17-23 are presently active in this case, Claims 1 and 21 amended by way of the present amendment.

In the outstanding Official Action, Claim 21 was objected to, Claims 1, 2, 5-8 and 10-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,589,877 to Thakur in view of the publication entitled Silicon Processing for the VLSI Era, vol. 1: Process Technology to Wolf et al.; Claims 4 and 17-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Thakur in view of Wolf et al., and further in view of the publication to Park et al.; and Claims 21-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Thakur in view of Wolf et al., and further in view of U.S. Patent Publication 2004/0121605 to Maydan et al.

First, Applicants wish to thank Examiner Maldonado and Primary Examiner Fourson for the March 1, 2006 personal interview at which time the outstanding issues in this case were discussed. During the discussion, Applicants presented amendments and arguments substantially as indicated in this response. While no formal agreement was reached, the Examiners indicated that the arguments and amendments presented may overcome the outstanding rejection pending further consideration upon formal filing.

With regard to the objection to Claim 21, this claim has been amended as suggested by the examiner. Therefore, the objection is believed to be overcome.

Turning now to the merits, in order to expedite issuance of a patent in this case, Applicants have amended independent Claim 1 to clarify the patentable features of the present invention over the cited references. Specifically, Applicants' Claim 1 as amended, recites that the first, second and additional ultra thin oxide layers are approximately 5Δ-10Δ

thick, and to delete the term "at least a portion of" as suggested by Primary Examiner Fourson during the interview. Finally, Claim 1 has been amended to clarify that the end result of the claimed process is to provide a substantially contamination free substrate surface.

Claim 1 as amended recites a method of processing a substrate including growing a first ultra thin oxide layer of approximately 5Δ-10Δ on a surface of the substrate to consume defects in a surface region of the substrate, etching away the first ultra thin oxide layer to remove at least some of the consumed defects from the substrate and reveal a subsurface of the substrate, growing a second ultra thin oxide layer of approximately 5Δ-10Δ on the subsurface of the substrate to consume more defects in the surface region of the substrate, and etching away the second ultra thin oxide layer to remove at least some of the consumed more defects from the substrate. Also recited is monitoring the surface region of the substrate and repeatedly growing an additional ultra thin oxide layer of approximately 5Δ-10Δ to consume additional defects and etching the additional oxide layer to remove the consumed additional defects to provide a substantially contamination free substrate surface based on the monitoring of the surface region, wherein at least one of the etching steps comprise a plasma etch process.

In contrast, the cited reference to Thakur discloses a method of growing an oxide. As seen in Figure 1 the oxide growth process may include a rapid thermal oxidation step 22d followed by cleaning step 22e and an additional oxide growth step 22g. That is, the process may include alternating oxide growth and cleaning steps. As described in paragraph 4, lines 32-50 of Thakur, the RTO process provides an oxide thickness of at least 10Δ, preferably 30-40Δ. Thus, Thakur does not disclose forming an ultra thin oxide layer of 5-10Δ thick as now recited in Claim 1, and actually teaches a preference for much thicker oxides. As described in the Background section of Applicants' specification, such a thicker oxide creates defects in

the substrates, which is precisely a problem that the present invention is intended to avoid. Thus, Thakur actually teaches away from the present invention as now claimed in amended Claim 1.

The Office Action also takes the position that Applicants' specification does not disclose the oxide thickness as critical and therefore the oxide thickness range is a "mere dimensional limitation" that is obvious to "optimize" under In re Daley and other case law.[1] However, as discussed in the March 1st interview, the Background section of Applicants' specification does disclose that the oxide thickness is critical to avoiding substrate defects. Moreover, it is well settled that a particular parameter must first be recognized as a result effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of the variable might be characterized as routine experimentation.[2] The outstanding Official Action has not identified any thickness variable within the prior art reference to Thakur, and has not identified any recognition in any prior art that an ultra thin oxide growth provides some benefit over a conventional oxide thickness such as a 30, 40 or 50 nm thickness. Without such recognition in the prior art, cases such as In re Daley are inapplicable.

The secondary references to Wolf et al., Park et al. and Mayden et al. are cited for specific teachings in the dependent claims as are not believed to correct the deficiencies of Thakur discussed above.

For the reasons discussed above, Applicants' independent Claim 1, as amended, patentably defines over the cited references. Moreover, as the remaining pending claims in this case dependent from Claim 1, these remaining pending claims also patentably define over the cited references. Nevertheless, Applicants note that Claim 2 has been amended to recite that the ultra thin oxide layer is 5Δ thick. As discussed in the March 1st meeting, there

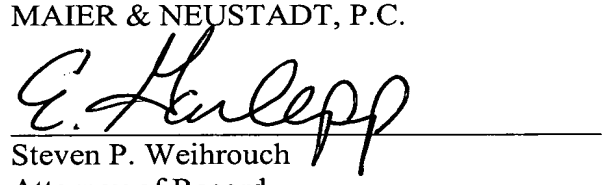
[1] See Official Action at page 4, paragraph 2.
[2] See In re Antonie, 559 F.2d 1618, 195 USPQ 6 (CCPA 1977).

is nothing in any of the cited prior art to suggest such a thin oxide layer. This provides additional basis for patentability over the cited references.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

Steven P. Weihrouch
Attorney of Record
Registration No. 32,829
Edwin D. Garlepp
Registration No. 45,330

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